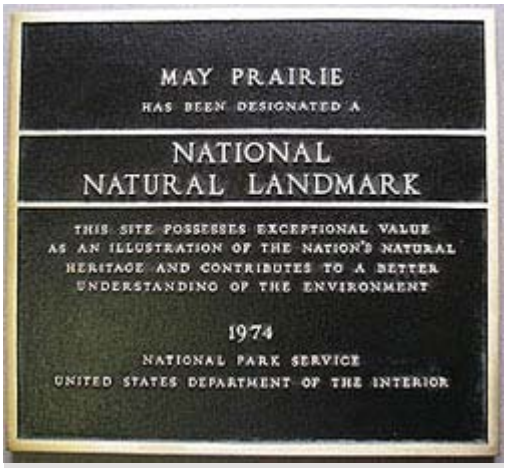
Tennessee's National Natural Landmarks Contribute to the Nation's Geological and Ecological History

By Andrea Shea Bishop



A bronze plaque is presented to owners of designated National Natural Landmarks who agree to participate in the program and retain the integrity of the property. This is the May Prairie plaque. *Photo Courtesy of Division of Natural Areas*

In 1947, Joseph and Louise McAnulty purchased a 10-acre tract of forested land within the city limits of Bolivar. They later learned that their woods were a remnant of a rare virgin forest!

McAnulty was a prominent local businessman whose family had lived in Hardeman County for many generations. The local Episcopal Church had owned this forest since the 1800s where they built a girl's school on a slope surrounded on three sides by wooded ravines. The McAnulty family built their home on this old school site being careful not to disturb the precious forest that, as far as they knew, had never been cut.

In the 1970s, university professors informed McAnulty that his old-growth forest was the only known remaining example of the original upland forests that once existed in West Tennessee prior to settlement.

In this diverse mixed oak forest were many old White Oaks measuring up to 56 inches in diameter and estimated to be 450 years old. The professors recommended "McAnulty's Woods" to the National Park Service as a National Natural Landmark. It was designated in 1973 when the McAnulty family signed a voluntary agreement to continue to preserve and protect the site. The land will keep its NNL status for as long as the owners abide by this agreement.

NPS provided a bronze NNL plaque that the McAnultys enclosed in a brick monument at their home. Mr. and Mrs. McAnulty are deceased and the home and forest are both owned by their daughter, Jo McAnulty. The house and forest are for sale and she is looking for a conservation buyer that will "appreciate the unique quality of the virgin forest and will act as a responsible steward to protect the land."

McAnulty's Woods, an upland forest above the Hatchie River Bottoms, remains a secret treasure protected on private land. Six of the 13 Tennessee National Natural Landmarks are located on private land and permission from the landowner is necessary to visit. These examples of the state's best natural heritage sites would have probably remained unknown to the general public if not for the National Natural Landmarks Program.

The National Natural Landmarks Program

The NNL Program was established in 1962 under authority of Historic Sites Act of 1935 and is managed by the National Park Service. The purpose of the National Registry of Natural Landmarks is to encourage voluntary preservation of nationally significant natural areas involving both private and public lands that have many types of uses.

As of November 1989, there were 587 Designated NNLs throughout the nation. Unfortunately, the NPS placed a moratorium on new designations on Nov. 18, 1989, due to landowner rights and funding issues. The moratorium was lifted 10 years later in 1999. Only two NNLs have been designated since 1989. Tennessee's first NNL, Reelfoot Lake, was designated in 1966. Twelve additional Tennessee natural areas were designated from 1971 through 1974.

Site Evaluations

About 3,000 sites in the United States were studied for the NNL Program. These natural areas were identified by various means including literature searches, mail surveys, personal contact with locals, professional geologists, biologists, ecologists, foresters, soil scientists, state and federal agencies, etc. The NPS invited professionals with the best knowledge of the specific regions to examine the sites' role and significance within a "Theme Classification System." This system was developed to assure that the natural history of all physiographic regions of the United States were included.

Over 200 sites in Tennessee's physiographic regions were studied and evaluated under many different theme types—national history, geologic, biotic and ecologic, rivers and lakes, caves and springs, and eastern deciduous forest theme, to name a few.

Sites were given significance rankings from 1-5: Priority 1 = high degree of national significance, recommended without reservation; Priority 2 = nationally significant, recommended for on-site study; Priority 3= does not qualify as an NNL, but appears to be of state or local significance as a unique natural area worthy of protection; and, Priority 4 and 5= not recommended, could be of state or local significance but not outstanding as natural areas nor scientific natural areas.

Of the 200 Tennessee sites studied 84 were given Priority 1 or 2 ranking, that's 42 percent determined to be nationally significant!

Tennessee Researchers

During the 1970s and early 1980s, the NPS contracted with several university professors and professionals in the eastern United States, including four from Tennessee, to evaluate Tennessee's 200 plus sites and the hundreds of other sites in the states within the same physiographic regions. The NPS paid their travel expenses and a salary so small that essentially the researchers volunteered their time and money over several years to complete this important task.

The main contributors from Tennessee were ecology professor Dr. Hal DeSelm and geology professor Dr. Mike Clark, from the University of Tennessee; ecology professor Dr. Elsie Quarterman from Vanderbilt University; biology professor Dr. Maurice Edwards from UT Chattanooga; and geologist Dr. John Armon from Memphis State University. The ecologists were usually teamed with the geologists and they traveled together most of the time.

Dr. DeSelm and Dr. Clark worked in the Appalachian Plateaus and Appalachian Ranges Regions. Dr. Quarterman worked with Richard Powell, a geologist with Indiana Geological Survey, in the Interior Low Plateaus Region.

When asked to describe his experiences with the NNL program, Richard Powell wrote: "There is no doubt that the most enjoyable aspect of the entire project was our time in the field together. Elsie Quarterman told me she learned some geology from me and I certainly gained a lot of ecological and floral data from her. I considered the reports I prepared for the NPS as some of the most valuable work of my life… I especially remember the waterfalls in Tennessee."

The late Dr. Catherine Keever was an ecologist at Millersville State College in Pennsylvania and a close friend and professional peer of Dr. Quarterman. She studied many of the Tennessee sites in the 1960s and early 1970s such as Savage Gulf, May Prairie, and the Cedar Glades that became some of the first designated NNLs. Many other knowledgeable Tennessee professors and professionals played a heavy role in site selections, visits and evaluation.

The Best of the Best

The Tennessee Conservationist has published many articles on Tennessee's State Natural Areas and State Parks over the years including many designated NNLs. Featured here are the less familiar Tennessee Natural Landmarks and a few other sites that were originally studied as part of the 84 sites that ranked Priority 1 or 2 as nationally significant.

The Lost Sea NNL is the commercial name for the Craighead Caverns system. This 311-acre cave system has the largest known underground lake in the nation. The visible portion of the lake covers about 4.5 acres and is 800 feet long, 200 feet wide, 60 feet deep and 140 feet below the ground. Cave features include waterfalls, columns, flowstones, draperies, soda straws, and other forms of stalactites, stalagmites, and very rare "anthodite" clusters of radiating needles of gypsum or aragonite on the walls and roof of the caverns. Anthodites features are known from only a few caves and Craighead Caverns is thought to have 50 percent of the world's known number. Bones and footprints of a giant Pleistocene jaguar have also been found.

Arnold Engineering Development Center Natural Area's Goose Pond and Sinking Pond are two non-contiguous sites located on U.S. Air Force property in Coffee County and were designated as NNLs in 1974.

Both wetlands are characteristic of the Barrens area in the eastern Highland Rim. A clay layer restricting downward drainage of water in winter and spring and upward movement in summer underlies soils.

Sinking Pond is an extremely rare virgin swamp forest covering about 150 acres and consists of a series of connected sinkholes. Some of the sinkholes have up to 15 feet of standing water during the winter and spring and are dry in the summer and fall. Some of the old-growth trees within the swamp are very large, such as an Overcup Oak measuring 56 inches in diameter. The Water Tulpelo that grows in Sinking Pond is about 100 miles away from its natural range in West Tennessee.

Goose Pond is a pristine example of an open marsh covering 20 acres and surrounded by a forested buffer zone. Dr. Hal DeSelm has identified at least seven distinct marsh vegetation zones with about 28 vascular plant species from the deepest to the shallowest water zones. A number of these are rare plants whose distribution is normally confined to the Coastal Plain Province.

Conley Hole, designated as a NNL in 1973, is one of the most spectacular examples of a pit cave in the United States. The cave entrance is about 20 feet wide but suddenly opens up to 100 feet in width and continues to get wider. The vertical shaft extends downward for 175 feet into a chamber that is about 800 feet wide. Conley Hole is privately owned and is located in a remote part of northern Grundy County. Landowner permission is needed to visit.

Grassy Cove NNL is one of the nation's best illustrations of karst development and underground drainage and is one of the largest natural sinkholes in the United States, eight miles long and three miles wide. It can be seen from space!

Grassy Cove, designated a NNL in 1973, demonstrates the mechanism responsible for the formation of the Sequatchie Valley that is located just a few miles south. In time, Grassy Cove's eroding karst floor will eventually become part of the Sequatchie Valley. Several caves are located in the cove including Devil's Step Hollow Cave and Salt Peter Cave. Black Mountain and Brady Mountain rise 1,300 feet above the cove and provide a breathtaking view of this scenic valley.

The Grassy Cove community is one of the most intact agricultural areas of Tennessee. Grassy Cove and the surrounding mountains are mostly privately owned. The state and the Tennessee Parks and Greenways Foundation have acquired a few hundred acres and two caves.

Future Designations?

Many of Tennessee's sites that ranked Priority 1 and 2 were probably tabled by NPS during the moratorium. Sites like the Hatchie River, Window Cliffs, Doe River Gorge, Warner Parks, House Mountain, Rattlesnake Falls, Roan Mountain Massif, Short Mountain and Virgin Falls will hopefully be resurrected and considered for NNL designation in the future. Only about 30 percent of the 84 nationally significant Tennessee sites remain in private ownership. The remainder of sites are protected by state and federal agencies or private conservation organizations.

For more information on the NNL Program visit the Web site: www.nature.nps.gov/nnl. The NNL calendar is available through the Web site and has been produced since 2004. A Tennessee site has not yet been featured. Photographers can submit their photos for the photo contest.

For information on the Division of Natural Areas, visit the Web site: www.tn.gov/environment/na.

(Andrea Shea Bishop is a heritage botanist with the Division of Natural Areas in the Department of Environment and Conservation in Nashville.)